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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,075	11/05/2003	Bertil Hok	0715.0007C	6305
27896	7590	09/01/2004	EXAMINER	
EDELL, SHAPIRO, FINNAN & LYTLE, LLC 1901 RESEARCH BOULEVARD SUITE 400 ROCKVILLE, MD 20850			CYGAN, MICHAEL T	
			ART UNIT	PAPER NUMBER
			2855	

DATE MAILED: 09/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/701,075	<b>Applicant(s)</b> HOK ET AL.	
	<b>Examiner</b> Michael Cygan	<b>Art Unit</b> 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>05 November 2003</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.84(h)(5) because Figure 2 show(s) modified forms of construction in the same view.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the structures corresponding to claims 4 and 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of

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any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not present a written description of the perforated mass element.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Tom (US 6,295,861 B1). Tom discloses the claimed invention, a sensor

comprising a housing [34] having two cavities [44,45], each having within a resonating quartz crystal composed of compliant elements [12,14] and inertial elements [18,20,22], having means for exciting the crystals and comparing the output signals to determine the relative gas content of the cavities, having a flow controlling pump [118], and a filter (column 10 lines 7-15). See entire document, especially Figures 1-3 and column 6 lines 21-65.

5. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Passeri (US 3,789,655). Passeri discloses the claimed invention, a sensor comprising a housing [26] having two cavities [28,30], each having within a resonating bimorph inherently composed of compliant and inertial elements, having means [48] for exciting the crystals and for comparing [60] the output signals to determine the relative gas content (density) of the cavities, having valves forming a means for introduction of gas (such gas is capable of being atmospheric). See entire document, especially Figures 1-3 and column 6 lines 21-65.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 2, and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers (US 6,321,588 B1) in view of Potyrailo (US 6,684,683 B2). Bowers discloses a sensor comprising a housing [100] having an array of SAW sensors, having means for exciting the crystals and comparing the output signals to determine the relative gas content of the cavities, having a flow controlling pump [420], and a filter [440]. The oscillators are comprised of ASICs integrated onto a single chip and having a component [130] for digital communication with a microprocessor [150]. See entire document, especially Figures 1 and 4 and columns 4-5.

Bowers discloses the claimed invention except for multiple cavities and a micromachined silicon structure and a spring/mass element. Potyrailo teaches a sensor for gases having multiple cavities bordered with a semipermeable membranes and each containing a gas sensor such as a SAW or an equivalent sensor such as a cantilever "or the like"; see Figure 7

and column 3. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use multiple cavities as taught by Potyrailo in the invention taught by Bowers to form the array, since Potyrailo teaches the advantage of chemical specificity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use cantilevers or spring/mass elements (as best understood from claim 6) as taught by Potyrailo in the invention taught by Bowers to form the array, since Potyrailo teaches that such elements are interchangeable, and the use of each would gain any advantages of the particular form.

With respect to claim 8, it is notoriously well known in the gas sensing art to use cantilevers made of micromachined silicon, and their use in the invention described above would have been obvious to one having ordinary skill in the art in order to utilize their well known properties having well known advantages.

### ***Conclusion***


7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents disclose gas sensors similar to that of the instant application: Robinson (US 2,952,153), Crawford (US 3,327,519), Haruta (US 4,246,773), Morison (US 4,255,964), Sekler (US 4,561,286), Matsushima (US 5,387,254), Pfeifer (US 5,571,944), Douglas (US 5,581,014), Potyrailo (US 6,360,585 B1), Nakano (US 6,581,452 B2), Fu

(US 6,598,459 B1), Larson III (US 6,668,618 B2), and Schaffer (DE 3125078 A1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cygan whose telephone number is (571) 272-2175. The examiner can normally be reached on 8:30-6 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**MICHAEL CYGAN, PH.D.**  
**PRIMARY EXAMINER**